

REMARKS

I. Status of the Claims and the Rejections

Claims 2-5 and 7-21 are pending in this application. The Office Action included a rejection of all of these pending claims. The Office Action also identified a number of claim objections. More particularly, claim 11 was objected to for an informality, due to using the word "cabins" instead of "cabin." Applicant has amended claim 11, as the Examiner suggested, to overcome this objection. Claim 12 was objected for informalities, due to using reference character "(28)" and the step of "generating" at least one air jet. Applicant has removed these claim features from claim 12 in the current response. Thus, Applicant respectfully requests that the objections to claim 11 and 12 now be withdrawn.

Claim 12 was rejected under 35 U.S.C. §112 for indefiniteness because the recitation "into the aircraft cabin" was allegedly unclear. Applicant has amended claim 12 to positively recite the aircraft cabin, thereby removing any indefiniteness. Applicant respectfully requests that this rejection of claim 12 now be withdrawn.

Substantively, claim 12 was rejected under 35 U.S.C. §102 for being anticipated by Japanese Patent No. JP 59,093,141 ("JP '141"). Claims 2-4 and 7-21 were rejected under 35 U.S.C. §103(a) for obviousness based on Goode et al U.S. Patent No. 3,203,473 ("Goode '473") in view of JP '141. Claim 11 was alternatively rejected under 35 U.S.C. §103(a) for obviousness based on Yoneda et al U.S. Patent No. 4,742,692 ("Yoneda '692") in view of Japanese Patent No. JP 61,240,055 ("JP '055"). Claim 5 was rejected under 35 U.S.C. §103(a) for obviousness based on Goode '473 in view of JP '141 and de Villiers et al U.S. Patent No. 5,647,532 ("de Villiers '532").

Applicant has amended claims 2-5 and 7-13, and Applicant has canceled claims 14-21. In view of these amendments and the following remarks, Applicant respectfully requests reconsideration of the claims.

II. Claim 12 is Novel

A. The Claim

Independent claim 12 is directed to a device for air conditioning an aircraft cabin. The device includes "an aircraft cabin; a guide pipe adapted to direct at least one air jet into the aircraft cabin; and a structure including a rotation device, said structure adapted to measure the temperature of the at least one air jet and alter the direction and the impulse of the air jet dependent upon the measured air jet temperature."

B. The Deficiencies of the Cited Prior Art

JP '141 is directed to a fan blowing grill (5) which is rotatably mounted on a shaft (7) within a discharge air slot (4) of an air conditioning unit. The air conditioning unit includes a temperature sensitive coil (1) coupled to shaft (7), and as the temperature sensitive coil (1) is heated, the shaft (7) rotates the fan blowing grill (5).

Claim 12 has been amended to recite a structure adapted to "alter the direction and the impulse of the air jet" (emphasis added). JP '141 fails to disclose any elements that alter the impulse of the air as well as the direction of the air flow. Consequently, JP '141 fails to anticipate claim 12. Applicant respectfully requests that this rejection of claim 12 be withdrawn.

III. Claims 2-4 and 7-13 are Non-Obvious

A. The Claims

Independent claim 11 is directed to a method for air conditioning an aircraft cabin. This method comprises "directing at least one air jet into the aircraft cabin with a guide

pipe; measuring the temperature of the air jet; and altering the direction and the impulse of the air jet depending upon the measured temperature, wherein the altering occurs via rotation of a structure including a rotation device." Dependent claims 2-4 depend upon claim 11, either directly or indirectly, and each recites additional features in combination with the features of independent claim 11.

Independent claim 12 is directed to a device for air conditioning an aircraft cabin, as discussed above. Dependent claims 7-10 and 13 depend upon claim 12, either directly or indirectly, and each recites additional features in combination with the features of independent claim 12.

B. The Deficiencies of the Cited Prior Art

1. Goode '473 and JP '141

Goode '473 is directed to an aircraft heating system. As shown in Figs. 1 and 2, the system includes an overhead manifold (26) having a plurality of distribution nozzles (27) for delivering hot bleed air into the main compartment (13) of the aircraft. This sort of duct work is commonly used in aircraft air conditioning systems and is referred to as a "piccolo duct." In these ducts, the over head manifold (26) is coupled to the aircraft cabin in a fixed position and the distribution nozzles (27) extend from the manifold (26) at fixed angles adapted to create a desired air flow pattern within the cabin.

The Office Action concedes that Goode '473 does not teach the method steps of measuring the temperature of the air jet or altering the direction and impulse of the air jet in response to the measured temperature, as recited in claim 11, or the related structure adapted to measure the temperature of the at least one air jet and alter the direction and the impulse of the air jet" recited in claim 12 (*see* Office Action, pg. 6). The Office Action states that it would have

been obvious to add the rotatable fan blowing grill (5) and temperature sensitive coil (1) of JP '141 to the aircraft heating system of Goode '473 to arrive at the currently claimed invention.

However, a person of ordinary skill in the art would not combine the rotatable fan blowing grill (5) of JP '141 with the aircraft heating system of Goode '473. Modifying the fixed angles at which the distribution nozzles (27) are directed away from the overhead manifold (26) in Goode '473 would undermine the desired air flow pattern those piccolo ducts are designed to create. Furthermore, the distribution nozzles (27) are very small in cross-section, such as a few millimeters in diameter, in order to allow the hot bleed air to reach all the distribution nozzles (27) along the length of the overhead manifold (26). In order to add the temperature sensitive coil (1), shaft (7), and rotatable grill (5) of JP '141, the distribution nozzles (27) would need to be completely redesigned or enlarged. Enlarging the distribution nozzles (27) will undermine the normal operations of the piccolo duct because the hot bleed air will not be able to travel the entire length of the overhead manifold (26) before exiting a distribution nozzle (27), thus preventing part of the aircraft cabin from receiving proper heat distribution. Such a drastic redesign of the Goode '473 system would not be undertaken by a person of ordinary skill in the art because the redesigned system undermines the operational benefits of the overhead manifold (26) and the distribution nozzles (27).

Even if Goode '473 and JP '141 were combined, the combination would still be deficient. As discussed above, JP '141 fails to recite a structure adapted to "alter the direction and the impulse of the air jet," as recited in claim 12, because the rotatable grill (5) of JP '141 does not change the impulse of the air jet. Goode '473 is completely silent as to changing either the direction or the impulse of the air jet. Neither cited reference teaches this structure or the related method step of altering the direction and the impulse of the air jet, as recited in claim 11.

Claims 11 and 12 are allowable over Goode '473 and JP '141 for at least these reasons. Claims 2-4, 7-10, and 13 each depend from one of the independent claims 11 and 12, and recite additional combinations of features not disclosed by the cited references. Applicant respectfully requests that the rejection of claims 2-4 and 7-13 now be withdrawn.

2. Yoneda '692 and JP '055

Yoneda '692 is directed to an air conditioning system for a train passenger car. As shown in Fig. 1, the air conditioning system includes a plurality of air conditioners (1) along the ceiling (1a) of the car, each of the air conditioners (1) having an inlet (3) and an outlet (2). The blowers and outlets (2) rotate with respect to the vertical direction in a periodic cycle to modify the flow characteristics in the entire passenger car as shown in Figs. 1A-1C. When a temperature difference between the ceiling and the floor of the passenger cabin exceeds a threshold value, a regulation period generator (22) in the controller modifies the cycle period time of the outlet (2) rotation accordingly. In other words, the angle of the outlet (2) and the corresponding air stream changes periodically following a predetermined cycle.

The Office Action admits that Yoneda '692 fails to teach the steps of measuring the temperature of the air jet and altering the direction and impulse of the air jet depending on the measured temperature, as recited in claim 11 (*see* Office Action, pg. 15). The Office Action states that JP '055 teaches these method steps, and further that it would have been obvious to combine JP '055 with Yoneda '692 to arrive at the claimed method.

JP '055 is directed to an air conditioner having a blowing outlet (1) connected to pivoting flow control vanes (2a, 2b). A temperature detector measures the air flow in the blowing outlet (1). If the air flow is too cold to be blown directly onto a human, a pair of cam plates (13a, 13b) are actuated for rotation, the cam plates operatively controlling the pivoting of

the flow control vanes (2a, 2b). However, one having ordinary skill in the art would not combine JP '055 and Yoneda '692. The primary thrust of Yoneda '692 is to improve comfort of passengers, which "can be improved by changing the wind velocity value at the heads of the spectators in relation to time" (*see* description pertaining to Figs. 3a, 3b, 3c). Constantly modifying this wind velocity value can only be done by a predetermined periodic cycle of outlet rotation, as disclosed in Yoneda '692. JP '055 teaches a system that stops all vertical flow of air depending on the temperature of the air being delivered, which means that the full predetermined periodic cycle of outlet rotation in Yoneda '692 would be prevented. Consequently, the wind velocity value at the heads of the passengers would not change, and the primary benefit of Yoneda '692 would be undermined.

Even if Yoneda '692 and JP '055 were combined, the resulting system would still be deficient. Yoneda '692 and JP '055 only disclose modifying the direction of the air flow or the cycle period for modifying the direction of the air flow in response to a measured temperature. Neither cited reference teaches the method step of altering the direction and the impulse of the air jet, as recited in claim 11. Claim 11 is allowable over Yoneda '692 and JP '055 for at least these reasons. Applicant respectfully requests that this rejection of claim 11 now be withdrawn.

IV. Claim 5 is Non-Obvious

A. The Claim

Dependent claim 5 depends upon claim 11, which is directed to a method for air conditioning an aircraft as discussed above. Dependent claim 5 further recites that the impulse of the air jet increases as the temperature increases.

B. The Deficiencies of the Cited Prior Art

This rejection depends upon the previously discussed rejection of independent claim 11 in view of Goode '473 and JP '141. Claim 11 is allowable over those references for at least the reasons provided above. De Villiers '532 is directed to an air diffuser that closes a vent when a room is too cold (*see* Col. 1, ll. 34-36). Consequently, de Villiers '532 does not overcome the deficiencies of Goode '473 and JP '141 with respect to claim 11. Claim 5 is allowable over the cited references for at least the same reasons as claim 11. Applicant respectfully requests that the rejection of claim 5 now be withdrawn.

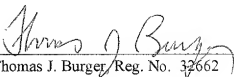
V. Conclusion

Based on the amendments to the claims and these remarks, Applicant respectfully asserts that this case is in condition for allowance, and respectfully request a notice to that effect. If the Examiner believes any issue requires further discussion, the Examiner is respectfully asked to telephone the undersigned attorney so that the matter may be promptly resolved.

Applicant does not believe that any fee is due in connection with this submission. However, if any additional fees are necessary to complete this communication, the Commissioner may consider this to be a request for such and charge any necessary fees to Deposit Account No. 23-3000.

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

By: 
Thomas J. Burger/Reg. No. 32662

Wood, Herron & Evans, L.L.P.
2700 Carew Tower
441 Vine Street
Cincinnati, OH 45202-2917
Voice: (513) 241-2324
Facsimile: (513) 241-6234